REMARKS/ARGUMENTS

Upon entry of this Amendment, Claims 1-15 will be pending in the present application for consideration. Claims 16-57 have been canceled without prejudice, as the claims of comparable scope are being pursued in a pending divisional application, U.S. Patent Application Serial No. 10/736,796, which was filed by Applicants on December 16, 2003. Claims 1, 3 and 9 have been amended to correct minor grammatical errors and thus to be in better form for allowance. Applicants respectfully submit that no new matter has been added by this Amendment. Favorable consideration and prompt allowance of all of the pending claims in view of the foregoing amendments and the following remarks are respectfully requested.

The Office Action Summary accompanying the September 22, 2004 Office Action indicates that this Action is final. However, Applicants respectfully disagree as to the finality of this Office Action. The text of the Office Action itself appears to indicate that this Office Action is non-final, as no mention is made therein as to the finality of the Action.

Furthermore, the September 22, 2004 Office Action provides a new ground of rejection as acknowledged by the Examiner on page 3 of the Office Action. It is respectfully submitted that the Examiner's new ground of rejection was not necessitated by Applicants' amendment of the claims, since Applicants' July 9, 2004 Response did not contain any claim amendment. Nor was the Examiner's new ground of rejection based on any information submitted in an information disclosure statement filed by Applicants during the period set forth in 37 C.F.R. § 1.97(c). Accordingly, the final rejection in this

Office Action is premature. *See* MPEP 706.07(a), (c), and (d). Applicants respectfully request that the finality of the rejection of the September 22, 2004 Office Action be withdrawn. It is respectfully submitted that Applicants will treat the September 22, 2004 Office Action as non-final for purposes of their response thereto.

Applicants respectfully respond to the Office Action dated September 22, 2004 as follows:

Claim Rejections - 35 U.S.C. § 103

In the Office Action, the Examiner rejected Claims 1-15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,069,960 to Fukumoto et al. ("the '960 Patent"). No claim has been amended to overcome the prior art rejection. Applicants respectfully traverse the Examiner's prior art rejection for the following reasons:

More specifically, the Examiner took the position in the September 22, 2004 Office Action that the '960 Patent discloses a foam glass tile with a closed outer pore skin, having a density within the claimed density between 30-100 pounds per cubic feet. As for the weight of the tile, the Examiner stated that "[i]t would have been obvious to construct the tile of **any weight deemed suitable for its intended purpose and use**." (September 22, 2004 Office Action, p. 2) (emphasis added). The Examiner further states:

> Proof of what the prior art has not been motivated to do or not to do has not been given. Applicant does not prove that the prior art cannot make [the recited invention]; neither does applicant prove that the invention of the instant application is not with in the scope of the prior art. With the range of density values met by the prior art, it is clear that applicant's disclosure is within the range of the teaching of

> [the '960 Patent] because density is a result of weight over size dimensions. With the range of density values met by [the '960 Patent], **it is clear that to make a stronger or heavier tile one need only to make it bigger in length, size or thickness.**

(September 22, 2004 Office Action, p. 3) (emphasis added). Applicants respectfully disagree.

The '960 Patent only discloses examples of the foam glass tiles produced in a relatively small size (*e.g.*, 180mm × 180mm × 60mm) (*See* the '960 Patent, Col. 7, lines 34-40; Col. 8, lines 17-18). Furthermore, the '960 Patent discloses that the interior foam material which makes up the bulk of the tile has a low density, resulting in a relatively light weight tile. Specifically, the '960 Patent discloses a foam glass tile having a range of density between 0.2 and 1.3 gm/cc (12.49 to 81.0 pounds per cubic feet) (*See* the '960 Patent, Col. 6, lines 43-46). According to Applicants' calculations, a tile of the size and density disclosed in the '960 Patent would have a relatively light weight in the range of only 0.86 pounds to 5.57 pounds. This is clearly well below the claimed lower bound of 30 pounds required by Claim 1 of the present application.

Rather than a mere design choice, the claimed range of weight of a foam glass tile is intended to provide the tile with an increased resistance to a large impact force, such as explosive shock or earthquake damage. However, the '960 Patent does not disclose a foam glass tile having a weight greater than 30 pounds as required by the claims of the present application.

Furthermore, Applicants respectfully disagree with the Examiner's position that it would have been obvious to construct a foam glass tile having a weight within the

claimed range (*i.e.*, greater than 30 pounds) from the teachings of the '960 Patent by simply making it bigger, as the Examiner seems to suggest in the above-quoted statement. One of the Applicants, Dr. Pedro M. Buarque de Macedo, respectfully submits herewith a Declaration Under 37 C.F.R. § 1.132, which describes the result of the experiments conducted under his direction and supervision in his university laboratory to replicate the specific examples of foam glass tiles described in the '960 Patent. FIGS. 1-3 in the Declaration show foam glass tiles reproduced in accordance with the teachings of the '960 Patent during Dr. Macedo's experiments. The figures show that those tiles developed large cracks and severe fractures across their surfaces. (*See* Declaration, FIGS. 1-3; par. 5). As would be obvious to any one of ordinary skill in the art, foam glass tiles having large cracks and fractures across their surfaces are not suitable for the intended purpose and use contemplated by the present invention, which include use for protective building surfaces and shock absorption. Despite several attempts, Dr. Macedo was never able to produce even one workable foam glass tile without large cracks and fractures when trying to replicate the specific examples of foam glass tiles described in the '960 Patent. (*See* Declaration, par. 5).

Dr. Macedo also discovered that, even aside from such serious defects as cracks and fractures, production of a foam glass tile in accordance with the teachings of the '960 Patent requires application of an enormous compression force to the mold for each tile. (*See* Declaration, par. 4). Although the '960 Patent teaches that some means of compression is needed to mold and form the disclosed tiles ('960 Patent, Col. 4, line 46), it was not until the experiments were performed that it was appreciated how large a

compression force would be necessary. For example, Dr. Macedo's experiments showed that production of a foam glass tile starting from a small, 2 inches by 2 inches mold required a pressure of 2,500 to 3,000 pounds per square inches (or psi) to compress the powdered block materials to mold them into a tile. This means that, to produce a 2 feet by 2 feet tile having a weight within the claimed range (*i.e.*, greater than 30 pounds), the production method in accordance with the teachings of the '960 Patent would require a compression force of 320 to 384 tons! (*See* Declaration, par. 4). Dr. Macedo's attempt to produce a foam glass tile of a large enough size having a weight within the claimed range (*i.e.*, greater than 30 pounds) did not succeed, because production of a tile of that size and weight in accordance with the teachings of the '960 Patent would have required such an enormous compression force that far exceeded the capability of his equipment. (*See id.*). Dr. Macedo declares in his Declaration that the requirement of such high level of compression force for producing a large foam glass tile that meets all the requirements of the present invention makes the steps taught by the '960 Patent "commercially impractical." (Declaration, par. 4). Further, the need for such an enormous compression force would teach against manufacturing larger (and thus heavier) tiles in accordance with the teachings of the '960 Patent.

In sum, Dr. Macedo found that the teachings of the '960 Patent do not lead to the present invention. All of his sample foam glass tiles made in accordance with the teachings of the '960 Patent developed serious defects such as large cracks and fractures, and were therefore unsuitable for the intended purpose and use contemplated by the present invention. Furthermore, Dr. Macedo found that, even aside from the serious

defects developed in the tiles, production of a large and thus heavy foam glass tile in accordance with the teachings of the '960 Patent would require an enormous compression force that far exceeds the capability of the conventional equipments such as the one used in his experiments. Dr. Macedo believes that the requirement of such a high level of compression force when producing a foam glass tile in accordance with the teachings of the '960 Patent would make commercialization of such tiles impractical and teach away from making larger foam glass tiles. In any event, even if one succeeds in applying the proper compression force to be able to produce a large foam glass tile having a weight within the claimed range, the tile produced in accordance with the teachings of the '960 Patent would still be fraught with large cracks and fractures as to be unsuitable for the intended purpose and use contemplated by the present invention. Accordingly, the result of Dr. Macedo's experiments as described in his Declaration clearly demonstrates that the '960 Patent does not teach or suggest how to make a foam glass tile having all of the claimed characteristics, including a weight greater than 30 pounds, that are suitable for the intended purpose and use contemplated by the present invention. (*See* Declaration, par. 6).

In view of the foregoing, Applicants respectfully submit that the '960 Patent does not teach or suggest a foam glass tile having a weight greater than 30 pounds as required by all of the pending claims. The pending claims of the present application are all directed to a foam glass tile which is heavier than the one disclosed in the '960 Patent. Based on Dr. Macedo's Declaration, Applicants further respectfully submit that the '960 Patent does not render obvious the present invention requiring the weight of the tile be

greater than 30 pounds. Due to the defects and the difficulty of production discussed above, one of ordinary skill in the art would not be motivated by the teachings of the '960 Patent to make a foam glass tile of the claimed weight based on the teachings of the '960 Patent. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all the claim limitations. MPEP 2143. The teachings of the '960 Patent does not meet any of the above criteria. Hence, it is respectfully submitted that the '960 Patent does not render any of the pending claims, Claims 1-15, obvious under 35 U.S.C. § 103(a). Applicants respectfully request that the Examiner withdraw the prior art rejection and that all of the pending claims be allowed over the '960 Patent.

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In light of the foregoing amendments and remarks, Applicants respectfully request that a timely Notice of Allowance with respect to all of the pending claims, Claims 1-15, be issued in this case.

Included herewith is a Petition for a One-Month Extension of Time. A check in the amount of $60.00 is also included herewith to cover the fee for a one-month extension of time for response for a small entity. No additional fees or extensions of time are believed to be due. However, authorization is given hereby to charge Deposit Account No. 01-1785 for any deficiency in fees necessary to preserve the pendency of the

subject application, or to credit the same in case of overpayment. A duplicate copy of this document is enclosed.

Respectfully submitted,

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